Extension of the Use of the Algorithm in the Guatemalan Highlands

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Summary

A previous OR study tested use of an algorithm as a job aid to encourage integrated services in the public sector. In the initial study, providers used the algorithm only for family planning services. Under a follow-on phase, the reason for limiting the use of the algorithm was studied, the training program was revised, and providers in Quetzaltenango were retrained. Under this technical assistance project, training was extended throughout the highlands and to other areas of the country after the MCH Program of the Ministry of Health (MSPAS) adopted integrated services and use of the algorithm as a national strategy.

An evaluation of institutionalization of the use of the algorithm was conducted six months after retraining of providers in Quetzaltenango. Results demonstrated that providers were using the algorithm, and the number of services covered by the algorithm had increased.

The MSPAS and Population Council collaborated on adapting the algorithm and accompanying guide to make it acceptable nationally. The final products were printed and are being distributed throughout the MSPAS system.

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I.   INTRODUCTION

In 1996 and 1997, the Ministry of Public Health and Social Assistance (MSPAS) conducted an OR in the departments of Quetzaltenango and San Marcos, with financial and technical assistance from the Population Council under funding from the Guatemala Cooperative Agreement and INOPAL III. The purpose of the study was to see the effects of training service providers from the MSPAS health centers and posts in the systematic delivery of reproductive health services using an algorithm. The algorithm is a series of six questions which are asked of all women of reproductive age who seek care in the health centers and posts. All the questions are answered with a yes or no, and depending on the response, the service provider either goes on to the next question or delivers the appropriate services. In addition to the algorithm, as part of the study, a guide or manual was developed that provides step-by-step detail on the way each of the services should be provided.

The study demonstrated that in the case of services that are traditionally emphasized by the health centers and posts, such as prenatal care and vaccinations, there were relatively few missed opportunities to provide additional needed services. However, in the case of family planning, post-partum care, and health education, missed opportunities were the norm. In the case of family planning, for example, a fourth of the women who came to the health centers were married, did not want to have more children and were not using any method of family planning. The majority of these women reported they wanted to use a method, but a large proportion did not even know that they could obtain methods in the health center. The study also demonstrated that many opportunities were missed to provide education about the different services available; the signs and symptoms of danger in pregnancy; children's diarrheal and respiratory infections; preparation of oral rehydration salts, and other areas. An additional cost study demonstrated the cost-savings to be gained from providing all needed services during one visit.

A qualitative study conducted among service providers demonstrated that they tended to perceive the algorithm solely as a mechanism for promoting family planning and did not use it in other services. In the follow-on phase, service providers were trained to use the algorithm with all women of reproductive age and their children. Once they understood its usefulness for a wide range of services, the providers were much more amenable to using it systematically. More recently, at the central level of the MSPAS, the algorithm has become much more acceptable and sought after by the personnel of Maternal-Child Health since they have learned its demonstrated advantages in a wide range of health services for women and children. MCH expressed interest in incorporating the use of the algorithm on a national basis. This project was developed to provide technical assistance to the MSPAS on the provision of integrated services systematically using the algorithm, and to develop a modified Guide and algorithm acceptable for the Guatemalan MSPAS use on a national level.

II.   OBJECTIVES

The objective of this project was to extend the use of the algorithm and guide in the departments of Huehuetenango, Totonicapán, Sololá, Chimaltenango, El Quiché, both of the Verapaces, Suchitepéquez and others. This is part of a larger strategy being developed in conjunction with Maternal-Child Health and the Ministry's Committee on Continuing Education to extend the use of the algorithm for reproductive health care on a national basis, thus expanding women's access to a wider range of services including prenatal care, family planning, post-partum care, and others. Specifically the objectives were:

- To train service providers at the district level and below in integrated service delivery using the algorithm. As part of this objective, an evaluation of the institutionalization of re-training on the algorithm under the previous OR was conducted to extract any lessons that might inform the training under this project.

- To collaborate with the MSPAS National MCH Program to modify the algorithm and accompanying guide to reflect Guatemala's political and health care realities, so that they can be printed and distributed on a national basis.

III.   PROJECT ACTIVITIES

Three principal activities carried out under this project were the following:

- ▸ In-service training was conducted for a large number of MSPAS personnel. This training was conducted in the Service Delivery Points (SDPs), health centers and posts. It was conducted for all personnel - including receptionists, doorkeepers, etc. - in addition to service providers.

- ▸ An evaluation was conducted of the degree to which use of the algorithm had been institutionalized in Quetzaltenango following training that used the same methodology. The training had been conducted in the final phase of the previous OR.

- ▸ The Council collaborated with the National MCH Program to develop a technically correct and politically acceptable algorithm and Guide. These were printed and distributed on a national level.

These are described in greater detail below.

A.   Training

The training followed the redesigned curriculum and methodology tested in the final phase of the previous OR.   The trainers dedicated two days to training in each health center. Since most patients are seen in the morning, the morning of the first day was spent training in the actual office visits. The trainers began with the district nurse, who is the chief professional

nurse in the district health center and supervisor of the auxiliary nurses who work in the health posts. Then they continued with the rest of the service delivery staff, mostly auxiliary nurses.

The trainer observed the nurse providing services to the first patient, while systematically noting missed opportunities to explore additional needs, provide needed education, and provide or refer for additional needed services using a specially designed recording form (see Graphic 1). At the end of the office visit, the trainer respectfully suggested to the nurse what additional services the patient was a good candidate to receive. The nurse then provided the service or made a referral. During the course of this training, the nurse began to increase use of the algorithm, which had been placed on her desk at the beginning of the morning, and gradually missed opportunities decreased. When the trainer observed that the district nurse was using the algorithm consistently and correctly, (s)he moved on to another service provider. On average the trainer spent three-quarters of an hour with each of the center staff and observed three to five office visits.

In the afternoon of the first day, the rest of the health center staff were trained. The district chief (physician) was presented with the data on missed opportunities in his/her own center and how the use of the algorithm helped to decrease them. Data from the chief's own center was very convincing about the value of using the algorithm.

In addition to recording missed opportunities, the trainers recorded time spent in each consultation. The trainer was able to demonstrate to the district chief that the clinic visit took slightly over one additional minute when the provider used the algorithmic approach, and the center staff, who now had real-time practice using it, could assure the district chief that they did not find the algorithm difficult to use. This involvement of each district chief was crucial to assuring support for changing practices.

In the afternoon of the first day, the non-service delivery staff, such as the doorkeeper and receptionist, were trained to use the algorithm to identify additional needs and advise the patient what additional services to request. These personnel are often gatekeepers, and they can deny or assure patients' access to care.

The second day focused on training the nurse auxiliaries who staff the health posts. They were brought from the health posts to the health center for training. Many, if not most health posts, have such low patient volume that only in health centers is it possible to assure the presence of patients. Training of the nurse auxiliaries from the health posts followed the same format as with staff of the center.

The trainers evaluated each trainee to assure ability to use the algorithm with patients to systematically explore patients' needs and provide additional services.

A total of 926 health care personnel were trained in the algorithm through June 30, 1998. In April 1998 the training was expanded to include family planning methods and counselling in

their use.

During the course of this project, the National MCH Program of the Ministry of Health adopted integrated services and use of the algorithm as a national strategy for the reduction of maternal and infant mortality.

B.   Evaluation of Institutionalization

In the previous OR testing of the algorithm in the San Marcos and Quetzaltenango health areas, the training originally did not produce statistically significant differences in the number of additional services provided to patients. Unwilling to give up on a service delivery model and job aid that appeared to have tremendous potential to improve health services in Guatemala, the Population Council carried out a series of observations and interviews to try to understand the reason for the failure.   The findings were the following:

- ▸   the trainees were the key service providers, but not the decision maker who determined the service delivery model for each district;
- ▸   because training in Depo Provera was included in the training (Depo was being introduced into the MSPAS system at the time), the trainees misunderstood that the algorithm was to be used for family planning clients, rather than all clients;
- ▸   the trainees were unable to begin to implement integrated services immediately upon their return to their SDP because the supporting materials did not arrive until later, and they quickly lost the skills acquired in training; and
- ▸   the barriers to services often included the doorkeeper, receptionist, and other non-service providers.

In response to these findings, the MSPAS and Population Council redesigned the training and extended the research to conduct a new round of training and evaluate its implementation in health centers.

Methodology of the Evaluation
The evaluation used both service statistics and interviews to assess institutionalization of the use of the algorithm. Service statistics were gathered for six months before and five months after the training since only five months of service statistics were available at the time. They were then averaged and converted to an estimate for six months. MSPAS service statistics are reported by number and type of consultation, not by number of individual patients. Since the purpose of the algorithm is to increase the number of services provided, the comparison seemed reasonable, although it would have been preferable to develop a ratio of services provided per patient. However, the design of the service statistics system did not permit this. A better design would compare service statistics for the same months of the year, and this will be done at a later date.

A questionnaire was developed for interviewing health center personnel. A structured interview was conducted with all categories of staff about their knowledge of the algorithm

and their experiences with its use.

Interviews were conducted with a convenience sample of 58 health center staff, 47 of whom were among the 126 previously trained. Because interviews were conducted during a time of the year when staff rotate on 6-week vacations, all staff who were present in the center at the time of the evaluator's visit were interviewed. Table 1 in the Annex reflects the breakdown of the positions held by the staff interviewed.

Results: *Increases in Services Provided*
Service statistics covering the six-month period prior to the training and five months after were gathered from the Quetzaltenango Health Area offices to serve as an objective indicator of whether the number of services provided had increased. The five months were used to estimate six. Specifically, service statistics for the services covered by the algorithm were collected: family planning, vaccinations for children, prenatal and post-natal care, tetanus toxoid for women of fertile age, infant diarrhea, and pneumonia.   During the time under study, no new health centers or posts had been established in the Area that might account for any increase. Nevertheless, an increase was found for all services.

In family planning, the number of Couple Years of Protection (CYP) provided increased 60%.
 Vaccinations for children nearly doubled. Tetanus toxoid for women increased by 163%.
Prenatal care increased 12%; post-natal care increased 18%; treatment for diarrhea increased 3%; and treatment for pneumonia increased 13%. Every category of service increased, with the greatest increases (apart from vaccinations for both women and children, which received an additional push from the government because of recurring outbreaks) in the services that previously had been most neglected, family planning and post-natal care. These data are displayed is Table 2 in the Annex.

Experiences with Use of the Algorithm
Evaluators asked to see all copies of the algorithm and its accompanying guide. Of the 40 respondents who reported having received the guide, 39 still had it, 27 had it in the center at the time of the visit by the evaluator, and 36 reported having consulted it at least once. At least one copy of the algorithm was found hung on the wall in all of the health centers visited.
 In two-thirds of the centers, it was located in the Post-consultation service, followed by 61.7% in the Consultation and Pre-consultation, 49% in the injection room, and 25.5% in the receptionist/secretary's area. Although the most desirable practice would be to locate the algorithm in all five sites, the Consultation room is probably the most important to assure that each patient's needs are fully met, since patients are not allowed to return for additional services after they are in Post-consultation.

Staff were asked with which patients they found it easiest and most difficult to use the algorithm. Nearly one quarter responded that it was easiest to use with women with children and another quarter responded pregnant women. A third found it most difficult with unmarried women. The latter may be partially explained by the fact that unmarried patients are often commercial sex workers who come for their required monthly check-up; few adult

unmarried women visit health centers for their personal health care.

One key to assuring institutionalization of new practices is follow-up by supervisors. In interviews conducted approximately one year prior to these interviews, a larger sample of health center staff from the Quetzaltenango Health Area were asked whether there had been any follow-up to the original training. At that time only one district physician had given any follow-up supervision. In this round, 95.2% of the respondents responded positively to this question.

The algorithm is a job aid that supports the following practices: systematic exploration of patients' needs for additional service; information/education about those health needs; immediate provision of additional needed services; or when it is not possible to provide additional services immediately, a referral or appointment. For providers to adopt these practices, they must first be aware of their importance and also have a positive attitude toward adopting them. Respondents who had participated in the training were asked regarding their practices before and after; although it was not expected that their responses would provide an exact measure of their practice, at a minimum they provide an assessment of their perception of what their practices are or should be. In all, 28% reported that they explored needs for additional services before the training, and 54% reported that they always do so after; 53% said that they provided additional information/education before training, and 71% said they always do so after; 28.3% reported making referrals or appointments before, and 56.5 % reported doing so after; and 28.3% reported they provided additional services before training, and 60.9% reported always doing so after. Given both the perceptions of the staff and the objective evidence of increases in services provided found in the service statistics, it seems reasonable to conclude that practices changed in the directions supported by use of the algorithm.

C.   Development of National Algorithm and Guide

With significant input from MSPAS service providers who used the algorithm and central level personnel responsible for compliance with MSPAS norms, the algorithm and accompanying guide were modified and adapted for use on a national level. On June 8th Dr. Ernesto Velásquez, Director of the National Maternal Child Program approved the final versions. In July 4,500 copies of the algorithm and guide were printed and began to be distributed nationally, and additional copies were printed for future training of NGO clinical staff and dissemination nationally and internationally. A copy of each is attached.

IV.   Discussion

The redesigned training program achieved a much higher degree of institutionalization of use

of the algorithm for systematic provision of integrated health services for women and children. Evidence for this increase was found in both service statistics and the practices reported by the staff. The key characteristics of the training, which provide lessons for future training of health service personnel in other subjects, are the following:

- ▸ the new system had to be learned in a workplace setting and not in a classroom;

- ▸ key to successful learning was the immediate feedback provided by the trainer; and

- ▸ use of a tool for systematic documentation of missed opportunities, in this case the register used by the trainer while observing consultations, was crucial for obtaining the commitment of both service providers and decision makers to using the algorithm. This demonstrated the value of testing and introducing change within an operations research context.

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ANNEX

Graphic 1. **Register of Missed Opportunities**

MOTIVO DE CONSULTA:_____

CARGO_____INICIO_____FINALIZO_____PRE_____POST_____

SERVICIOS	EXPLORO NECESIDAD DEL SERVICIO	NECESITA EL SERVICIO	INFORMO (1), O DIO CITA PARA INFORMAR (2)	BRINDO EL SERVICIO (1), O DIO CITA PARA DARLO (2)
PRE-NATAL				
POST- NATAL				
LACTANCIA MATERNA				
NIÑO SANO				
VACUNACION DE NIÑO				
TOXOIDE TETANICO MUJER				
PLANIFICACION FAMILIAR				
REFORZAMIENTO DE METODO				
MANEJO DE I R A				
MANEJO DE DIARREA/R H O				

Table 1. Percentage distribution of positions of health center staff interviewed.

Position	N	%
Medical Director	5	8.6
Nurse	7	12.1
Nurse Auxiliary	37	63.8
Rural Health Technician	3	5.2
Environmental Sanitation Inspector	1	1.7
Secretary	2	3.5
Laboratory Technician	3	5.2
Total	58	100.1

Table 2. Services provided six months before and six months (estimated*) after training.

Service	Before	After (Estimated)	% Increase/Decrease
Family Planning (CYP)	864.9	1387.8	60
Children's Vaccinations (doses)	59,341	114,346	193
Prenatal	4,676	5223	12
Post-natal	775	918	18
Tetanus Toxoid for Women	9869	26003	163
Infant diarrhea	2366	2443	3
Pneumonia	4368	4951	13